

We claim:

- 1 1. An apparatus for making a physiological test and/or delivery of drugs comprising:  
2 an oral platform;  
3 a microchip mounted on or in the platform for making medical diagnoses and/or  
4 delivery of drugs; and  
5 a stick connected to the platform to serve as a handle or conduit from the  
6 microchip on the platform for exterior communication.
- 1 2. The apparatus of claim 1 further comprising a candy shell coating the platform.
- 1 3. The apparatus of claim 2 further comprising medicinal agents in the candy shell.
- 1 4. The apparatus of claim 1 where the platform has a plurality of fluidic ports  
2 defined therein conducive for communication of saliva to or oral delivery from the  
3 microchip.
- 1 5. The apparatus of claim 1 further comprising a base unit connected to the stick  
2 and communicated to the microchip.

1 6. The apparatus of claim 5 where the platform, microchip, and stick are combined  
2 together into a lollipop and further comprising a plurality of base units which are  
3 interchangeable with a plurality of lollipops.

1 7. The apparatus of claim 6 further comprising a cradle unit capable of temporarily  
2 being coupled to the base unit for recharging the base unit.

1 8. The apparatus of claim 6 where the cradle unit further provides data processing,  
2 communication and/or display.

1 9. A method for making a physiological test and/or delivery of drugs comprising:  
2 providing an oral platform;  
3 collecting saliva or breath through the oral platform;  
4 delivering collected saliva or breath to a microchip mounted on or in the platform;  
5 and  
6 making a medical diagnosis from collected samples of saliva or breath and/or  
7 delivering drugs through the platform.

1 10. The method of claim 9 further comprising providing a candy shell coating the  
2 platform.

1 11. The method of claim 10 further comprising incorporating medicinal agents in the  
2 candy shell.

1 12. The method of claim 9 collecting saliva or breath through the oral platform  
2 comprises collecting saliva or breath through a plurality of fluidic ports defined therein  
3 and communicating the collected saliva or breath to the microchip or orally delivering a  
4 substance from the microchip.

1 13. The method of claim 9 further comprising communicating the microchip with a  
2 base unit.

1 14. The method of claim 13 further comprising providing a plurality of platforms,  
2 microchips, and sticks as an integral units as a plurality of lollipops and interchangeably  
3 communicating a plurality of lollipops with the base unit.

1 15. The method of claim 13 further comprising a cradle unit capable of temporarily  
2 being coupled to the base unit for recharging the base unit.

1 16. The method of claim 15 further comprising performing data processing,  
2 communicating data, and/or displaying data through the cradle unit from the microchip.

1 17. The method of claim 11 where incorporating medicinal agents in the candy shell  
2 comprising incorporating saliva producing agents in the candy shell.

1 18. The method of claim 9 where making a medical diagnosis from collected samples  
2 of saliva or breath comprise making the medical diagnosis entirely within the platform,  
3 microchip, and/or stick combined as an integral unit as a lollipop.

1 19. The method of claim 9 where making a medical diagnosis from collected samples  
2 of saliva or breath comprise making the medical diagnosis within the platform,  
3 microchip, and/or stick combined as an integral unit as a lollipop in combination with a  
4 based unit communicated to the lollipop.

1 20. The method of claim 19 further comprising interchanging a plurality of lollipops  
2 with a base unit for making a corresponding plurality of medical diagnoses.

1 21. A micro-laboratory for oral insertion to collect oral fluids comprising:  
2 a microfluidic device for analyzing the oral fluids;  
3 an edible coating disposed on the microfluidic device; and  
4 a handle coupled to the microfluidic device.

1 22. The micro-laboratory of claim 21 further comprising an oral device to be placed in  
2 the mouth combined with the microfluidic device to facilitate oral use.

1 23. The micro-laboratory of claim 22 where the oral device comprises a pacifier, a  
2 bottle nipple, or a toothbrush.

1 24. The micro-laboratory of claim 21 where the microfluidic device performs a  
2 plurality of tests, including chemical assays that measure the presence of a single  
3 analyte or multiple analytes.

1 25. The micro-laboratory of claim 21 where the microfluidic device performs tests  
2 that monitor physical phenomena including temperature, viscosity, suction strength,  
3 saliva flow, or mouth activity.

1 26. The micro-laboratory of claim 21 where the microfluidic device performs assays  
2 that include colorimetric assays (e.g., indicators for ions or pH), absorbance, titrations,  
3 electrochemical (voltametry, amperometry, conductivity), optical scattering,  
4 immunoassays, or separations including electrophoresis and chromatography.

1 27. The micro-laboratory of claim 21 where the microfluidics device collects saliva,  
2 whereby sustained collection, higher acceptance by a patient of collection, and the  
3 ability to preprocess the sample during collection is provided.

1 28. The micro-laboratory of claim 27 further comprising a filter and preservation  
2 means for preserving the saliva, where the saliva passes through the filter and is  
3 combined with preservatives by the preservation means during collection.

1 29. The micro-laboratory of claim 21 further comprising means for delivering drugs.

1 30. The micro-laboratory of claim 29 where the means for delivering drugs is  
2 controlled to provide timed drug delivery.

1 31. The micro-laboratory of claim 21 where the coating is adapted to aid an assay  
2 performed by the microfluidics device.

1 32. The micro-laboratory of claim 31 where the coating stimulates salivary action,  
2 stimulates a specific target response in the body, or acts as a calibrant to the assay.

1 33. The micro-laboratory of claim 31 where the coating adjusts the time that fluids  
2 are transferred between the mouth and the microfluidics device by means of different  
3 thicknesses, densities, or resistance to saliva of the coating.

1 34. The micro-laboratory of claim 21 further comprising a kit of multiple micro-  
2 laboratories for use in a corresponding multiple of tests to provide redundancy over  
3 time.

1 35. The micro-laboratory of claim 21 further comprising means for inducing a  
2 physical change in a patient.

1 36. The micro-laboratory of claim 35 where the means for inducing a physical  
2 change in a patient comprises a heater, one or more electrodes, or an antenna for RF  
3 microwave stimulation.

1 37. The micro-laboratory of claim 21 further comprising means for imaging.

1 38. The micro-laboratory of claim 37 where the means for imaging comprise a  
2 microscope, an endoscope, an ultrasound imaging device, or a microwave imaging  
3 device.

1 39. The micro-laboratory of claim 21 further comprising an antenna for wireless  
2 transmission and wireless programming of the microfluidics device.

1 40. The micro-laboratory of claim 21 further comprising an external instrument  
2 designed to aid and enhance the utility of the micro-laboratory such as downloading  
3 data from the microfluidics device for logging or analysis, to provide power and control  
4 over the microfluidics device, or to draw fluid from the microfluidics device.

1 41. The micro-laboratory of claim 21 where the microfluidics device performs  
2 diagnostics, performs population tests, performs long term tests, monitors therapeutics,  
3 or delivers therapeutics over time.

1 42. The micro-laboratory of claim 21 where the microfluidics device detects analytes  
2 related to tooth decay or periodontal disease.

1 43. The micro-laboratory of claim 21 where the microfluidics device is used for  
2 sustained data collection of oral fluids with patient acceptance and simplicity of  
3 application.

1 44. The micro-laboratory of claim 21 where the microfluidics device is used to test for  
2 the presence of a therapeutic agent or a secondary agent that correlates to a therapy  
3 during the course of treatment to provide information about the correct dosing and  
4 effects of therapy.